

nated favorably and came up to good stands. Harvesting operations were finished. Truck suffered for rain, but was nevertheless in fair condition.—*J. W. Bauer.*

South Dakota.—Month warmer and wetter than usual. Rain and snow retarded cribbing of corn, and considerable corn was yet in fields on the 30th. Some corn showed slight damage by worms. Winter grains and also live stock were in fine condition. Weather was favorable for free grazing of stock on ranges, except during the last four days of the month, when there was a rain and snow storm followed by low temperatures, and from six to twelve inches of snowfall over the northern counties. Considerable plowing was done.—*S. W. Glenn.*

Tennessee.—The precipitation was light until the 28th and 29th, when good rains fell generally over the State, with heavy amounts in the northwest portion. The rainfall was sufficient for the needs of winter grains, and temperature and sunshine conditions were also favorable, so that wheat and oats were in fine condition. Corn, cotton, and peanuts were nearly all gathered by the close of the month, and farm work was well advanced.—*Roscoe Nunn.*

Texas.—Moderate temperatures prevailed during November, and there was little damage by frost. Good showers were well distributed throughout the month. Seeding winter grain was somewhat delayed, but conditions were favorable for germination and growth. Cotton picking delayed; 10 to 20 per cent to be picked northeast, but mostly picked farther south; boll weevil numerous; cattle turned into some fields. Rice thrashing almost completed. Cutting and grinding of cane in progress. Pastures and conditions for truck gardening improved. Cattle doing well.—*M. E. Blystone.*

Utah.—Warm, pleasant weather prevailed during the first two decades, followed by a stormy period near the close of the month, during which several inches of snow fell. Farm work advanced rapidly, and the sowing of wheat and rye was practically completed; an increase was reported in the acreage sown to winter wheat. Considerable plowing for spring grain was done. The gathering of beets and potatoes was completed. The range was good, though generally covered with snow. Stock was thriving.—*L. Lodholz.*

Virginia.—The cold and dry weather of the month in middle and tide-water Virginia was not favorable for crops, and, except locally, germination of late seeding of wheat, oats, and clover was much retarded, and the stands secured were not as good as usual. Growth of early seeding was also checked. In the great valley division, where the quantity of precipitation was greater than elsewhere in the State, and the distribution quite uniform, crop progress, both of early and late seeding, was better and the general situation was more advanced at the close of the month.—*Edward A. Evans.*

Washington.—Absence of rainy weather afforded opportunity to complete winter wheat sowing and fall plowing. Month was too cool and frosty for rapid germination or growth of wheat, but the crop was in fair condition and well covered by snow at the end of the month. The dry weather of the fore part of the month was unfavorable for pastures, but very favorable for gathering root crops and late apples.—*G. N. Salisbury.*

West Virginia.—Fine weather prevailed during the month and farm work progressed nicely. Wheat and rye made good growth and were looking well. A large acreage of wheat was sown. Pastures were in fairly good condition, and but little feeding was done. Stock was in good condition. Corn husking was nearing completion. Meadows and clover were in excellent condition. Some plowing was done for next year's crops.—*E. C. Vose.*

Wisconsin.—The month was mainly pleasant and favorable for completion of farm work. Winter wheat, rye, and grasses were in healthy condition and the snowfall over the central and northern counties in advance of the cold wave of the 29th furnished ample protection. The soil was generally well stored with moisture. The storm of the 29th was accompanied with very high winds and some damage to fences and wind mills occurred.—*W. M. Wilson.*

Wyoming.—The mild and pleasant weather of the first 25 days of the month was extremely favorable for the stock throughout the State, and the storm of the closing days of the month was not severe enough to seriously affect any of the stock. Ranges provided good feed and stock remained in good condition. A good supply of snow was accumulating in the mountains.—*W. S. Palmer.*

SPECIAL ARTICLES.

THE IMPORTANCE OF A WELL WRITTEN SYNOPSIS OF WEATHER CONDITIONS.

By N. R. TAYLOR, Observer, Weather Bureau. Dated Springfield, Mo., November 29, 1905.

The various meteorological elements shown on a weather map furnish at all times ample material for an interesting résumé of the general weather conditions that prevail over the territory covered by the Canadian, Mexican, West Indian, and United States stations reporting to the Weather Bureau. The space allowed on the weather map for the synopsis of general conditions is often too limited to fully express the different effects caused by the varied movements of the atmosphere.

Those who receive the weather maps are not only interested in the predictions that appear thereon, but some also desire to know the prevailing weather in particular regions other than their own; some, who have learned the meaning of the areas of high and low pressure, test their ability to forecast for themselves; and some study the observer's notes with a view to learning what it is all about. To the latter class belong the teachers and scholars of the hundreds of schools where weather maps are used in the course of study. The daily press of the country also belongs to this class, for the newspaper of to-day that does not contain some item from the weather map is indeed obscure and unimportant. Many newspapers, especially those published in the afternoon, not only use the forecast and tabulated matter, but print conspicuously the entire notes of the observer. A well written synopsis is always welcome "copy" to the newspaper reporter, who sees to it that it receives a place in his paper commensurate with its importance.

No better way can be imagined of teaching the public at least some of the principles which are involved in making weather predictions than an intelligently written summary of meteorological conditions. By reading such a summary the student of the weather map easily calls up a mental picture of prevailing atmospheric conditions throughout the country without the aid of the map itself.

A satisfactory synopsis ought to state as succinctly as possible, and in simple, but well chosen words, the prevailing

weather conditions over the entire country covered by the weather reports, and the changes that have taken place since the issue of the preceding map. It should not only make plain to the ordinary reader the reasons for any changes that have occurred, but should show what connection exists between the prevailing weather and the forecast. In fact, a key to the forecast should always be found in the synopsis.

Of the many meteorological elements that are taken into consideration in the construction of a weather map, the most prominent are pressure, temperature, precipitation, and winds; and these, it is thought, should usually be discussed in the order in which they have been named. Areas of high or low pressure, when considered of sufficient importance to be referred to at all, should be commented on from day to day, and their effects on the weather in the different localities over which they pass should be noted so long as they appear on the map. By adopting this rule it will be found that new interest in the map will be awakened, and persons who once saw no meaning in the isobaric lines will find themselves watching the drifts of the crests and troughs of the great atmospheric waves. Marked changes in temperature should not be passed unnoticed, and the section of the country in which such changes have occurred should be referred to either in a general way, as the eastern or western half of the country, the Rocky Mountain regions, etc., or specifically when they have resulted in a degree of heat or cold sufficiently severe to injure agricultural products in any locality, as a hot wave in Texas, or a freeze in California or Florida. Precipitation, whether of rain, sleet, hail, or snow, is always an important element, and a synopsis would be incomplete that omitted the fact of its occurrence or failed to mention the section of the country from which it was reported. High winds are also an important feature in discussing the general weather conditions; they are especially important when reported from maritime stations, and their significance will be more generally understood if referred to as "dangerous gales," "winds of destructive force," or some other popular expression. Areas of clear, partly cloudy, or cloudy weather, when they are well defined

and of sufficient magnitude to be conspicuous, should be made the subject of brief comment.

The following synopses will serve to illustrate what are thought to be satisfactory summaries of the meteorological conditions exhibited on two selected weather maps:

Weather map of 8 a. m., November 8, 1905.

Atmospheric conditions between the Mississippi River and the Rocky Mountains and in the extreme Northwest have remained practically inactive during the past 24 hours. A disturbance is developing over northern Mexico which is resulting in cloudy weather in southern California and Texas and rain in the vicinity of Los Angeles, Cal., and in the upper portion of the Rio Grande Valley. Rain has also fallen during the past 24 hours in the Ohio Valley, the Lake region, New York, and the New England States. No important temperature changes have occurred since yesterday. The weather conditions in the Southwest during the next 36 hours will be controlled by the Mexican disturbance, which will cause cloudy and unsettled weather in this vicinity, with probably showers to-night or Thursday. Higher temperature is indicated for to-night.

Weather map of 8 a. m., November 20, 1905.

A storm of marked intensity appears this morning over the middle Plateau regions, with a trough of low barometric pressure extending from the coast of southern California northeastward to Canada. Pressure has increased considerably over the northeast section of the country and has resulted in much colder weather in the Ohio Valley, the Lake regions, and the New England States. It is increasing rapidly over the north Pacific coast, with a steep barometric gradient, thence southeastward to the middle Plateau regions. Cloudy weather prevails this morning in the Southern States, and light rains have fallen during the past 24 hours in Missouri, southern Texas, California, southern Utah, and in portions of Georgia and Tennessee. Snow was falling this morning in Nevada. The Plateau disturbance will move eastward and will cause southerly winds and higher temperatures in this section during the next 36 hours, followed Tuesday by increasing cloudiness. Fair weather and moderate temperature are indicated for to-night.

RESULTS OF THE WORK DONE AT THE AERONAUTICAL OBSERVATORY OF THE ROYAL PRUSSIAN METEOROLOGICAL INSTITUTE, FROM JANUARY 1, 1903, TO DECEMBER 31, 1904.¹

By STANISLAV HANZLIK, Ph. D. Dated December 2, 1905.

Rapidly following the second volume (see MONTHLY WEATHER REVIEW, December, 1904) appears the third and last publication of this aeronautical observatory as a department of the Royal Meteorological Institute. The observatory has now been separated and transferred as an independent institution, under the title Royal Aeronautical Observatory at Lindenberg, to Lindenberg, 65 kilometers (40.4 miles) southeast of Berlin, in the county of Beeskow-Storkow.

The above-named publication contains, in 188 pages, the results of soundings of the atmosphere during two years, from January 1, 1903, to December 31, 1904. In the first year were made 481, in the second 453 ascents; on every day of this period at least one ascent was made. For economical reasons and on account of the great accumulation of material the results are given in a very condensed form; for the ground, 40 meters (131 feet) above sea level, and 200 meters (656 feet), and 500 meters (1640 feet), and each succeeding 500 meters, and for the greatest height reached. The remarks are very copious. The results are given in extenso only for the days of international ascensions, which are made once a month.

The ascents of elastic rubber balloons were not quite successful in this period, partly because other duties occupied Professor Assmann, who had hitherto personally supervised the work with rubber balloons, and, second, on account of the poor quality of the material used for the rubber balloons. An improvement was made on the rubber balloons by arranging at the bottom of each a trap vent or valve suspended by a line hanging inside of the balloon from the top. When the balloon, filled with hydrogen, ascends and expands, the line stretches more and more till at a certain stage it opens the

valve; then the expanded balloon loses enough gas to close the valve and the balloon falls to the ground with moderate velocity. The advantages of this arrangement are, that knowing how the diameter of the balloon increases with diminishing pressure, we can in advance—by the length of the line—fix the height to which the balloon has to ascend, and, second, the balloon comes down to the ground in most cases unharmed and can be used again. Professor Assmann plans to use this scheme every second day, if possible, at the new observatory in Lindenberg.

The table of the average and maximum heights reached in the years 1903 and 1904 shows the following figures:

	Average height.				Maximum height.			
	1903.	1904.	1903.	1904.	1903.	1904.	1903.	1904.
Kite balloon.....	m. 1,341	m. 1,384	ft. 4,400	ft. 4,541	m. 2,040	m. 2,157	ft. 6,693	ft. 7,077
Kites.....	2,014	2,433	6,603	7,982	4,598	5,100	15,085	16,732

These figures show a great improvement in the skill of the operators. In 1903 and 1904 the kite balloons had to be used in 30 per cent and 39 per cent, respectively, of the cases of all ascensions, on account of poor wind conditions.

The observatory took part in the international ascensions with kites, sounding balloons, and manned balloons; the greatest height reached in 1903 was 8770 meters (28,773 feet) by Professors Berson and von Schrötter.

In connection with this high ascent some interesting remarks are published about the influence of the rarefied air at this height on both mind and body. The observatory took part in the German educational exhibit at St. Louis, in 1904, where it was awarded a grand prize, as has already been reported in the MONTHLY WEATHER REVIEW.

The introduction to this third volume closes with a short paper by Professor Berson on the average and extreme temperature for each 500 meters and an index to all ascensions.

The new Royal Aeronautical Observatory at Lindenberg was opened on the 16th of October, 1905, in the presence of Emperor William II., and high officials, and scientists; among the foreign scientists, Mr. A. L. Rotch and the Prince of Monaco were present, and the latter was awarded the golden medal for science by the Emperor. The Prince of Monaco, assisted by Professor Hergesell, of Strassburg, has lately contributed much to the exploration of the higher strata of the air above the ocean.

HIGHEST KITE ASCENSION.

By Prof. C. F. MARVIN.

Dated Washington, D. C., December 18, 1905.

From a note in *Das Wetter* for November, 1905, p. 262, we learn that an extreme elevation of 6430 meters, or 21,096 feet; that is, almost exactly four miles, was attained at the German Aeronautical Observatory at Lindenberg, by means of a series of six kites. The record from automatic instruments sent up with the kites showed a drop in temperature from 40.8° F., at the ground to -13° at the highest point. The wind velocity in the lower strata was about 18 miles per hour, and at the highest elevation 56 miles per hour.

The Aeronautical Observatory under Doctor Assmann has been in operation only a few years, and yet has made wonderful progress in the meteorological exploration of the upper air by means of kites and balloons. A few years ago it seemed almost as if elevations of from two to two and a half miles were the limiting elevations for kite ascensions. The present accomplishment under Doctor Assmann is the more noteworthy from the fact that the kites were flown on land, where everything depends upon the natural wind. Hereto-

¹ Ergebnisse der Arbeiten am Aëronautischen Observatorium, 1 Januar, 1903, bis 31 December, 1904. Von R. Assmann und A. Berson.